

#29: Principles of Geology

name: _____

Use the textbook (Glencoe Earth Science) for this assignment.

1. Look at the geologic time scale on page 554. The Mesozoic Era (Time of the Dinosaurs) is divided into 3 periods. List them here.

2. According to the time scale, when did the dinosaurs become extinct?

3. Read section 21.2 (p. 557-565). What is the difference between “relative-age dating” and absolute-age dating”?

Explain each of the following geologic principles (all used in relative-age dating).

4. “original horizontality”

5. “superposition”

6. “cross-cutting relationships”

7. Look at the diagram on page 558. Which layer is older, the Muav Limestone, or the Redwall Limestone? Which geologic principle helped you figure this out?

8. Look at the diagram on page 560. How can you tell that the layers marked B, C, and D are older than the hardened magma (A)? Which principle applies here?

9. There is an unconformity on the diagram (p. 560). Which two layers is it found between?

10. Explain why the rock layers on the west side of the diagram do not match the rock layers on the east side.

11. _____-dating can be used to determine the actual, or _____-age of some rocks and fossils.

12. What specific kind of radiometric-dating technique can be used to determine the age of human bones, or charcoal (burnt wood) fragments?

13. What is the limit for this dating technique (your answer to #12) as far as how old the materials can be?

_____ years

14. Look at the photo on page 564. How did scientists use tree ring evidence to help figure out when this village was inhabited?

15. What are varves?

16. In varves, why are the summer deposits lighter-colored than the winter deposits?

15. What happened 66 million years ago? (NOTE: This is what caused the dinosaurs to go extinct.)

16. How did this event cause a thin layer of sediment to be deposited in many places throughout the world?

17. This thin layer, referred to as the “K-T Boundary”, is an example of a time marker called a “key bed”. What are two characteristics of a good key bed?

18. How did the 1980 eruption of Mt. St. Helens cause the formation of a key bed?

19. Give three examples of fossils that have been found with “original preservation”.

20. Some plants and animals become petrified (permineralization). Explain how this process happens.

Radiometric Dating

Go to <http://formontana.net> and then click on picture # 103.

21. Read the paragraph titled "Mother Lodes". State the three most interesting things you learned from this paragraph.

22. What are the two things archaeologists want to know when they find evidence of a past culture?

23. How do arrowheads and spear tips help archaeologists determine who used a site?

24. Unlike other radiometric techniques, Carbon-14 dating (a.k.a. "radiocarbon dating") cannot be used to date rocks that are millions or billions of years old. What can it be used for?

25. Why is it only useful for things that lived in the past 50,000 years?

26. Carbon-14 experiences "radioactive decay" over time. Explain what this means.

27. This is a tough question. You will need to think! After 11,500 years the ratio of N-14 to C-14 present in a bone would be 3:1. What would the ratio be if the animal had died 17,190 years ago (3 half-lives for C-14)?

28. What two types of materials were used for C-14 dating at this buffalo jump?

29. Based on the materials that were dated, during what span of time did Native Americans use The First Peoples Buffalo Jump?

30. Why did the use of buffalo jumps start to decline in the 1700s?